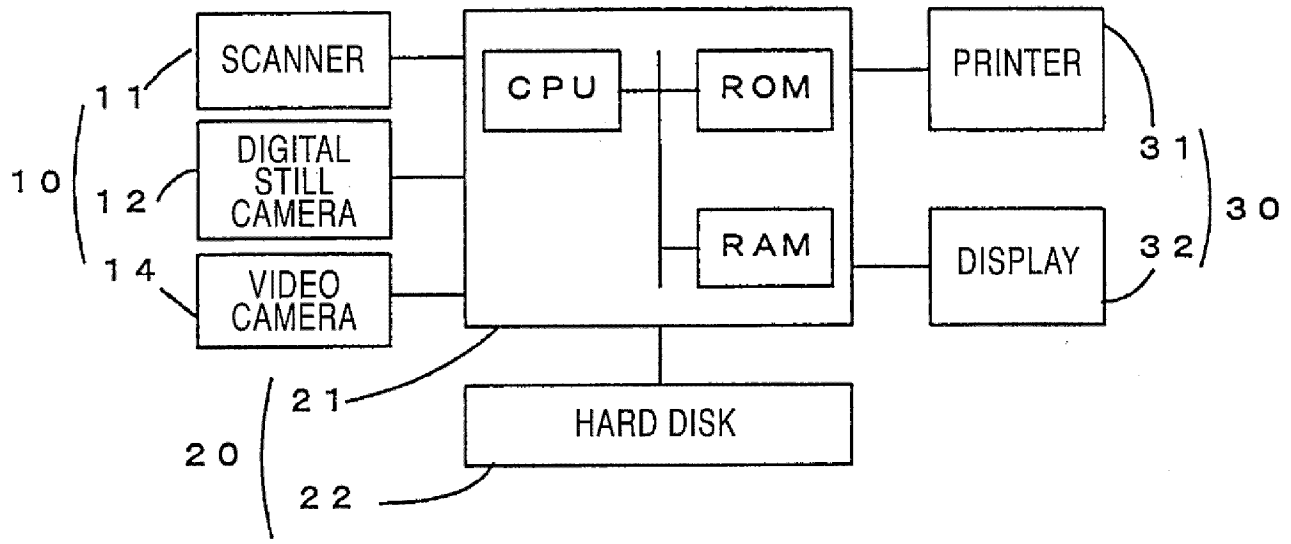

SCANNER
DIGITAL STILL CAMERA
VIDEO CAMERA
10
11
12
14
CPU
ROM
RAM
PRINTER
DISPLAY
30
31
32
HARD DISK
20
21
22

FIG. 1

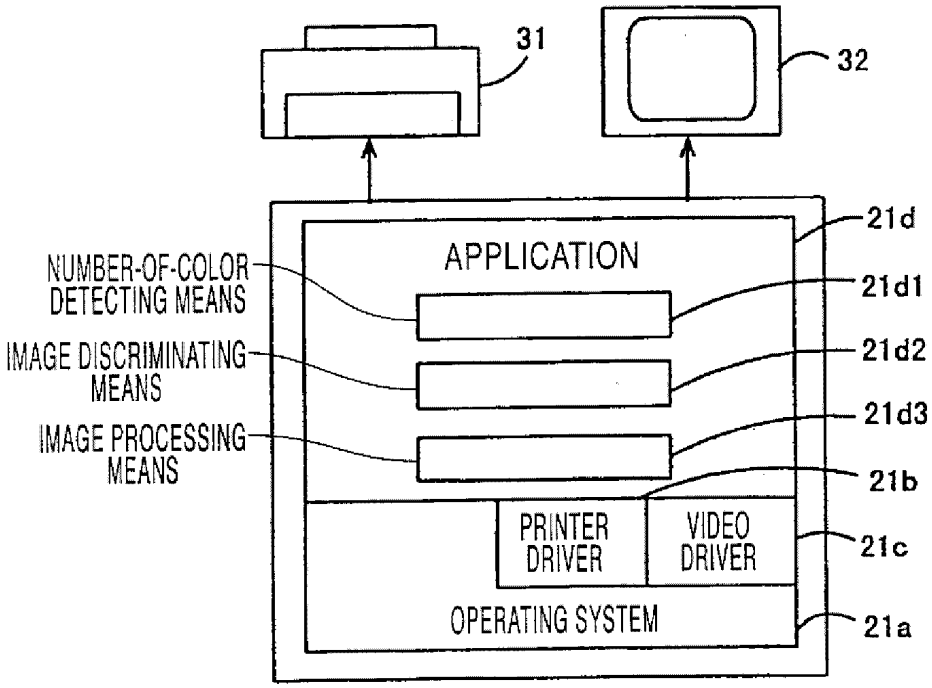


FIG. 2

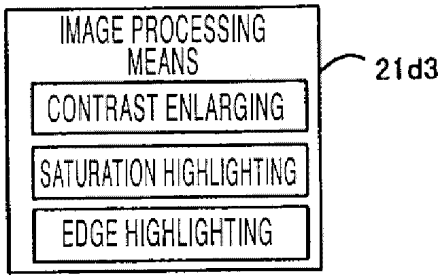


FIG. 3

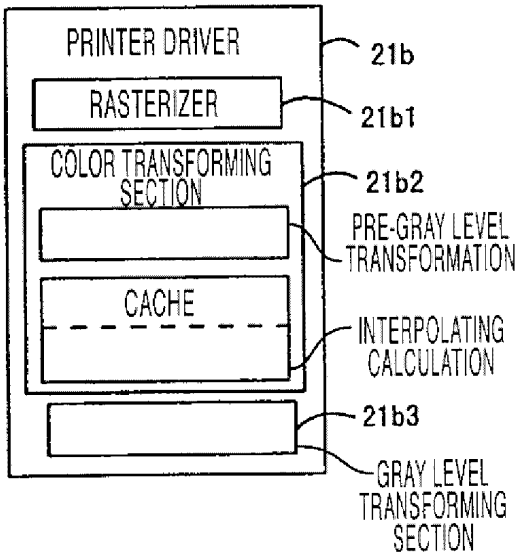


FIG. 4

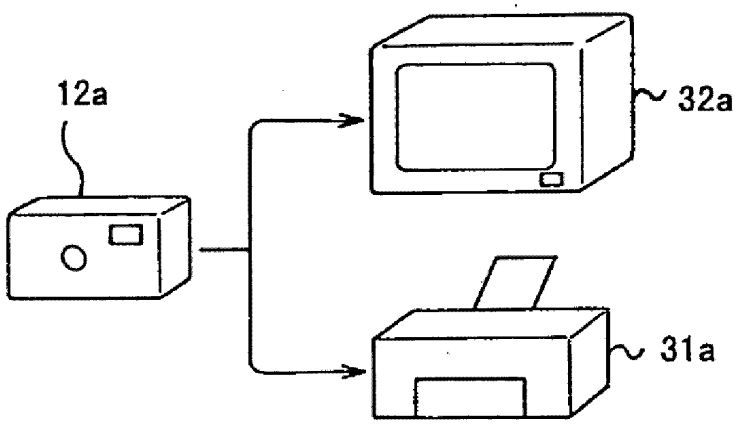


FIG. 5

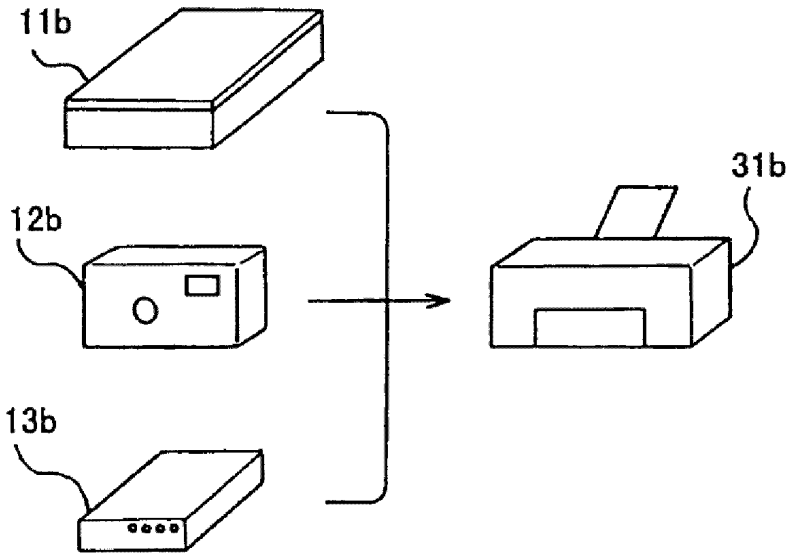
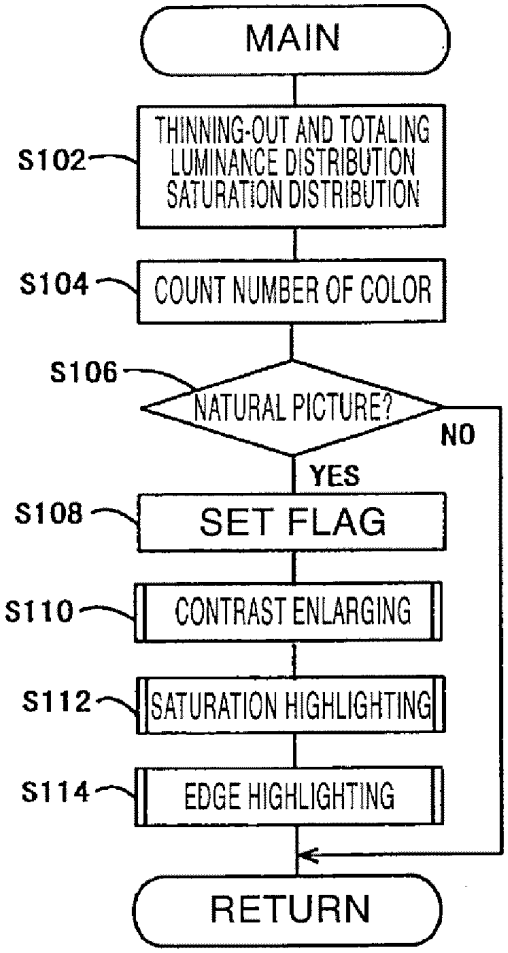
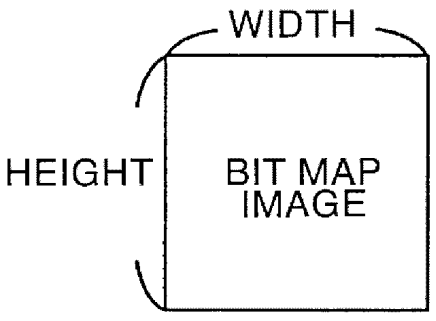


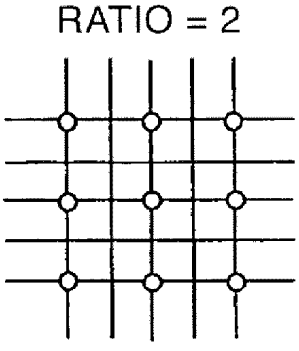
FIG. 6



F I G. 7



F I G. 8



F I G. 9

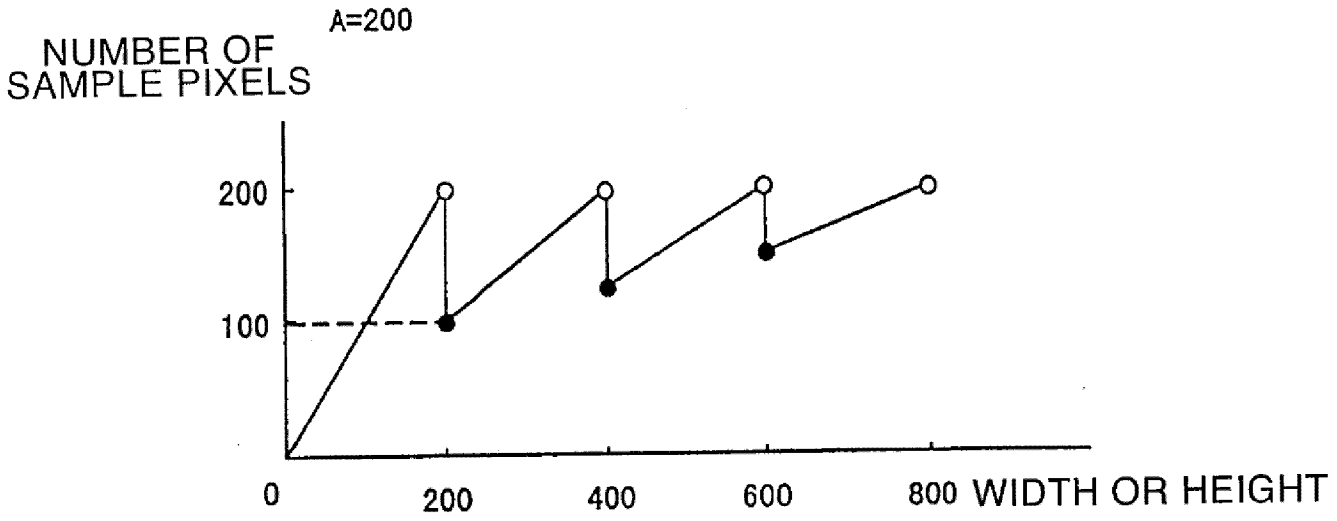

A=200
NUMBER OF SAMPLE PIXELS
200
100
0
200
400
600
800
WIDTH OR HEIGHT
RATIO = 1
2
3
4
DOES NOT MAKE SAMPLING

FIG. 10

FIG. 11(a)

FIG. 11(b)

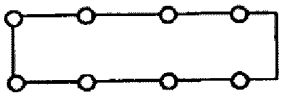
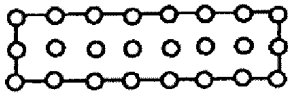


FIG. 11(c)



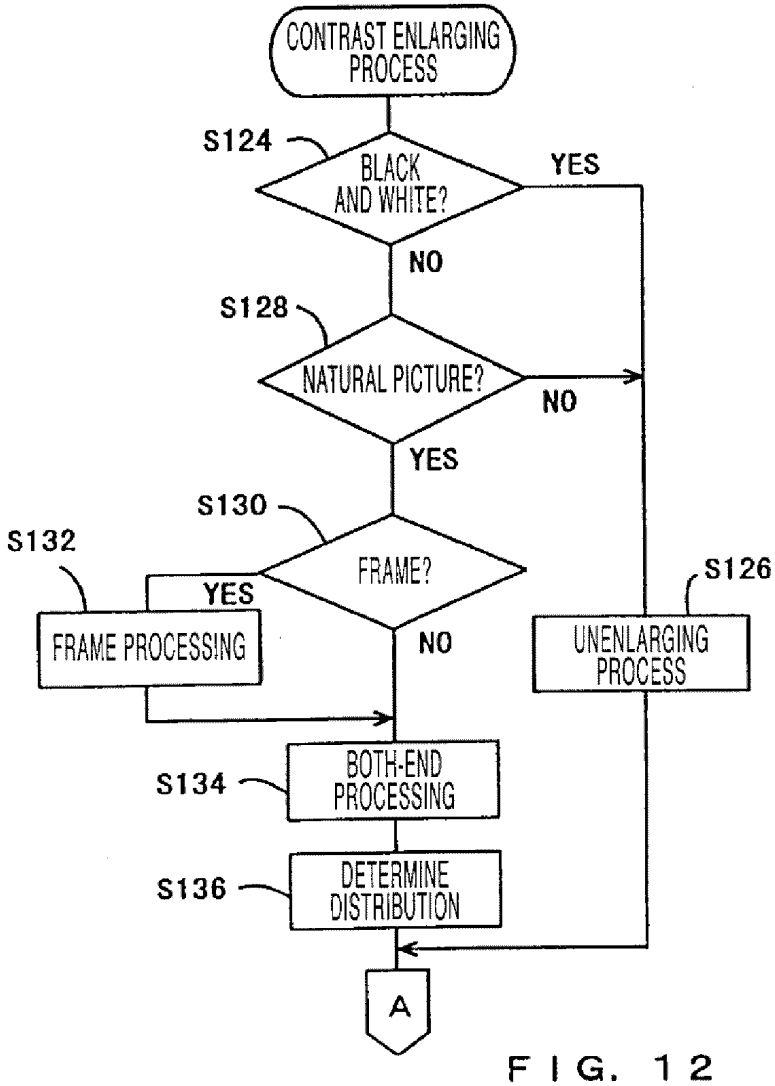


FIG. 12

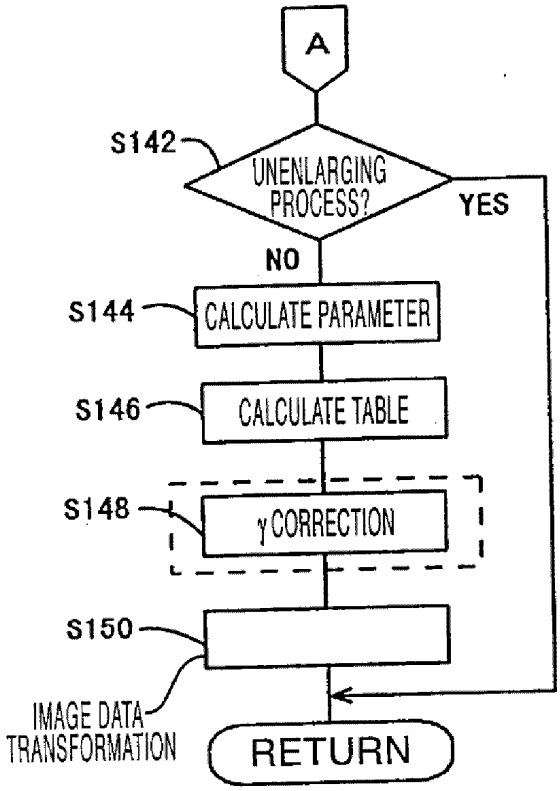


FIG. 13

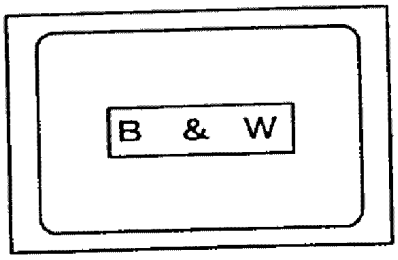


FIG. 14

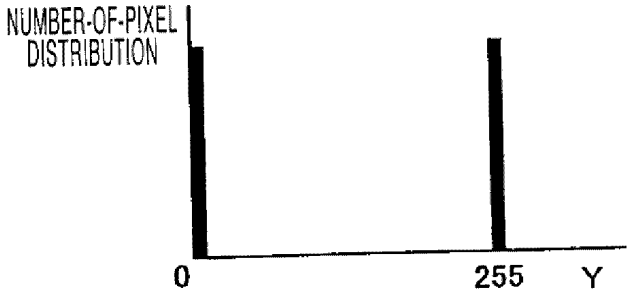


FIG. 15

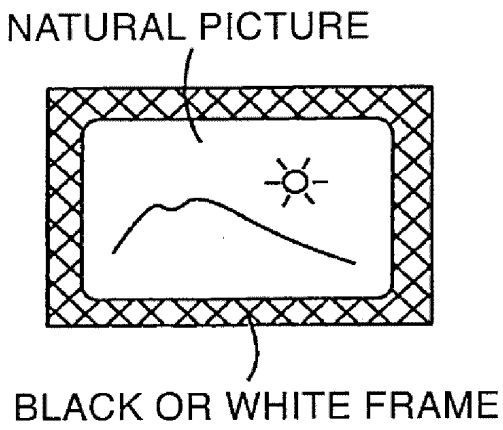


FIG. 16

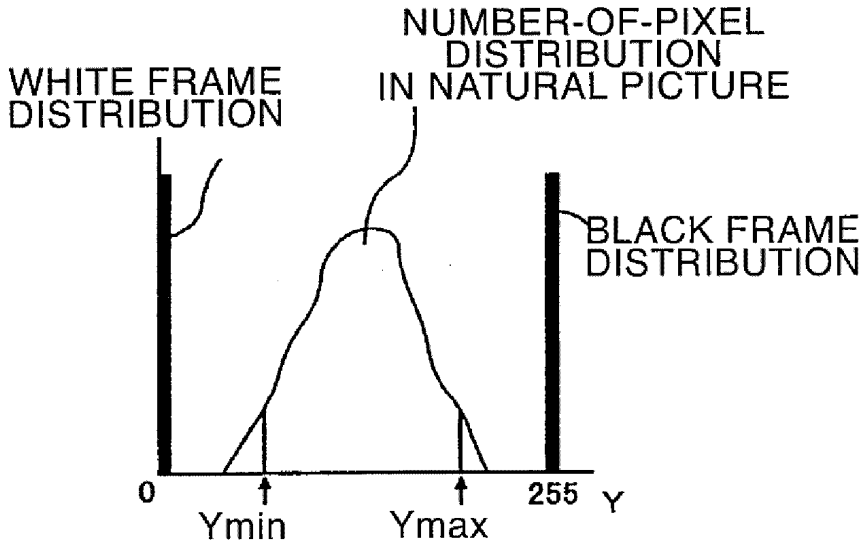


FIG. 17

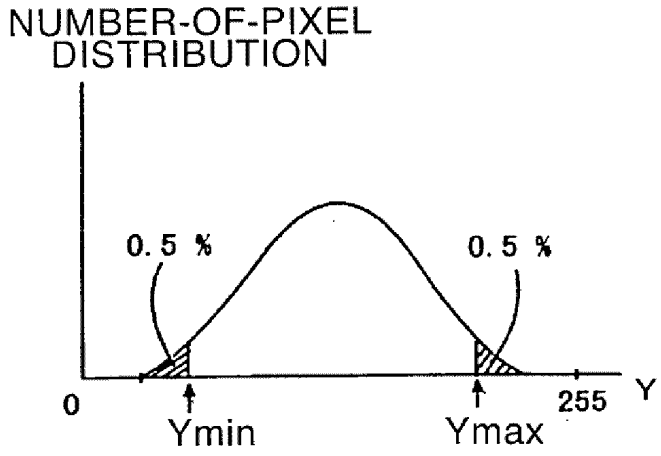


FIG. 18

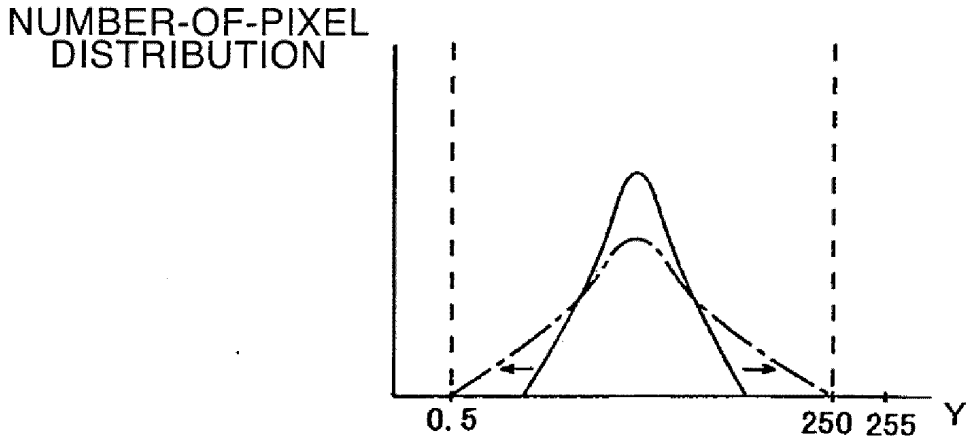


FIG. 19

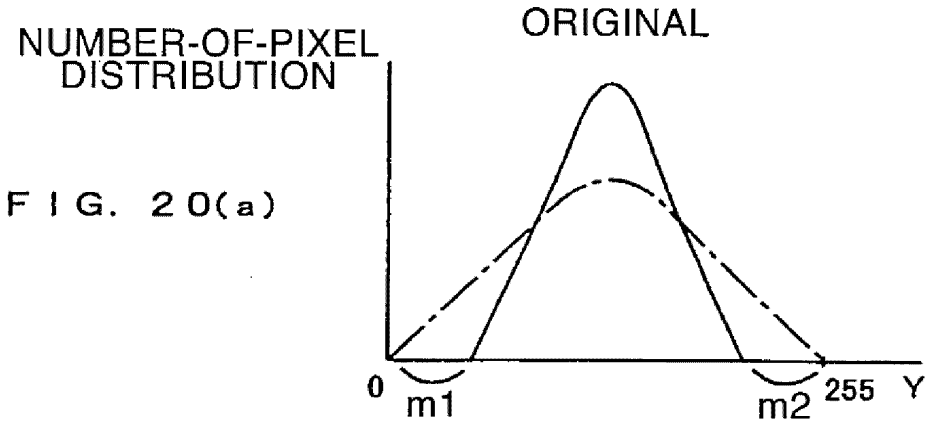


FIG. 20(a)

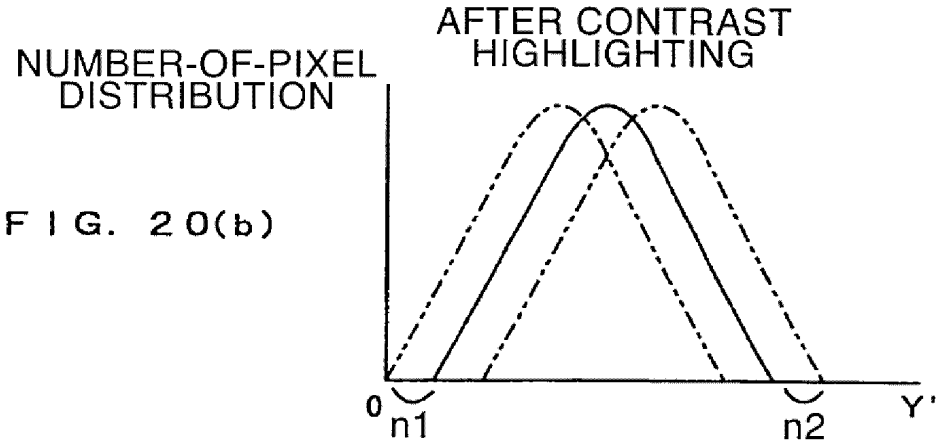


FIG. 20(b)

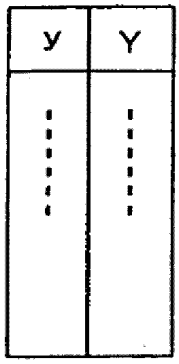


FIG. 21

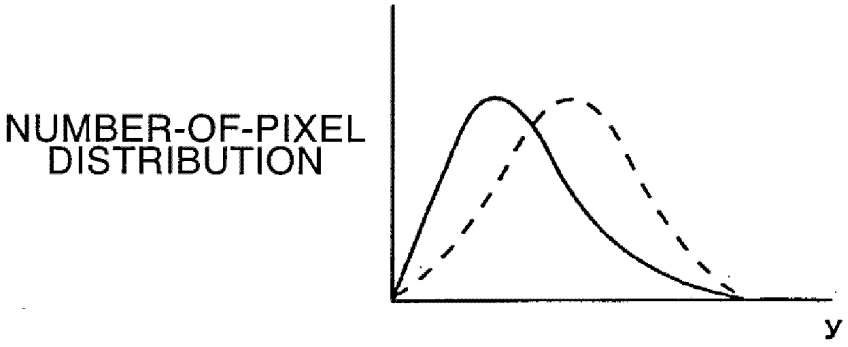


FIG. 22

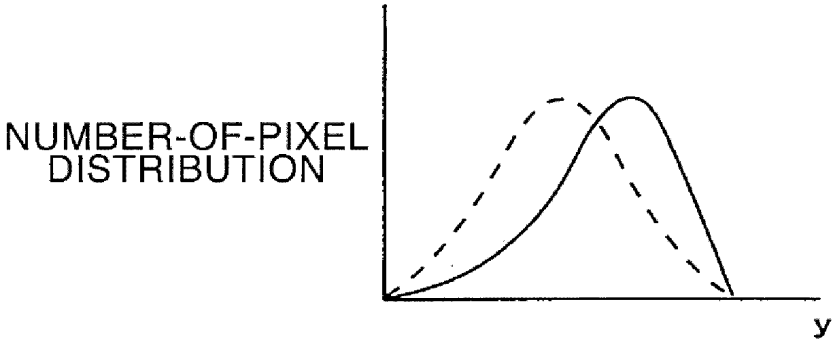


FIG. 23

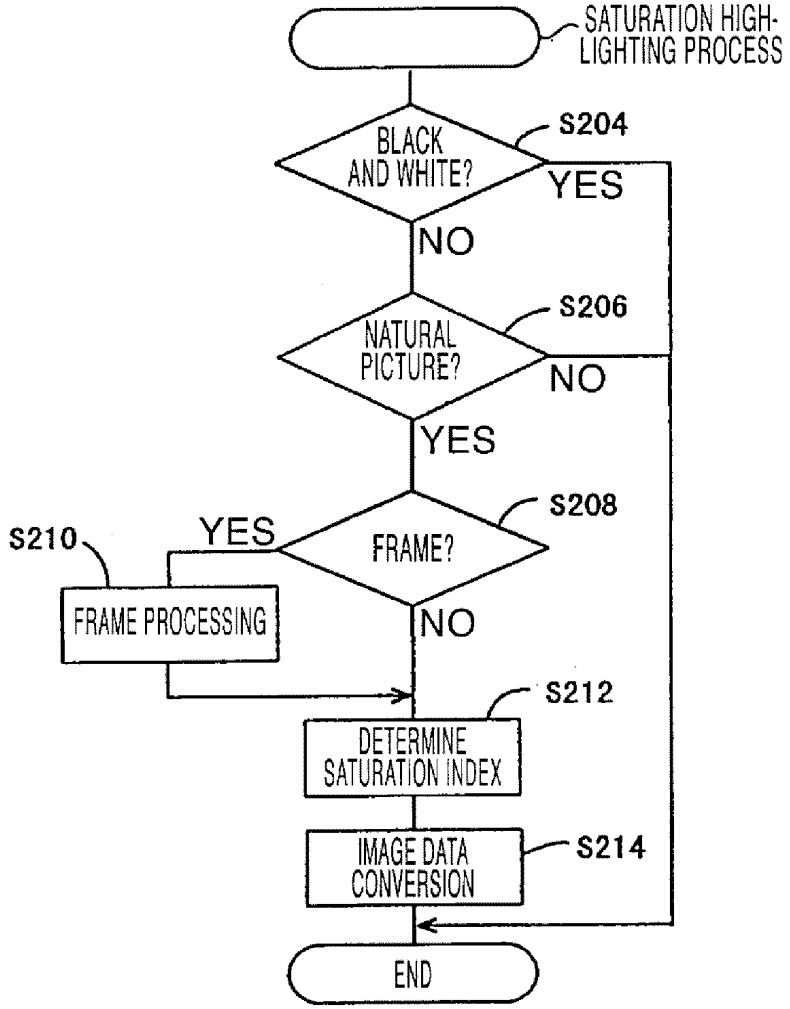


FIG. 25

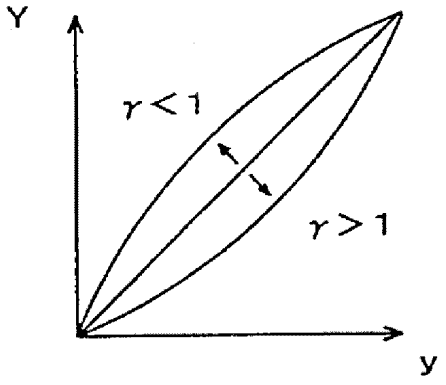


FIG. 24

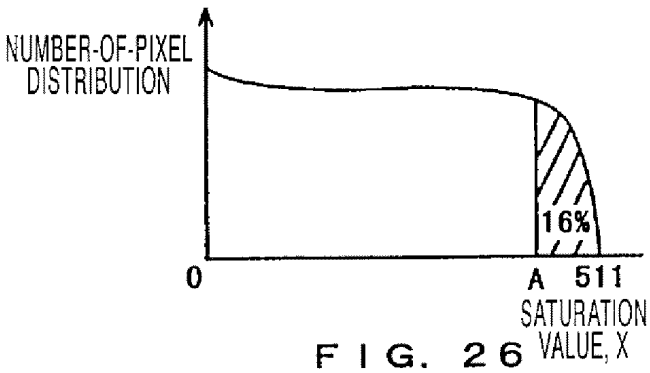


FIG. 26

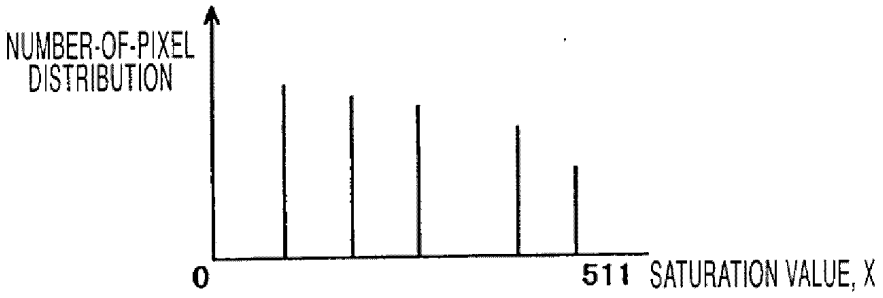


FIG. 27

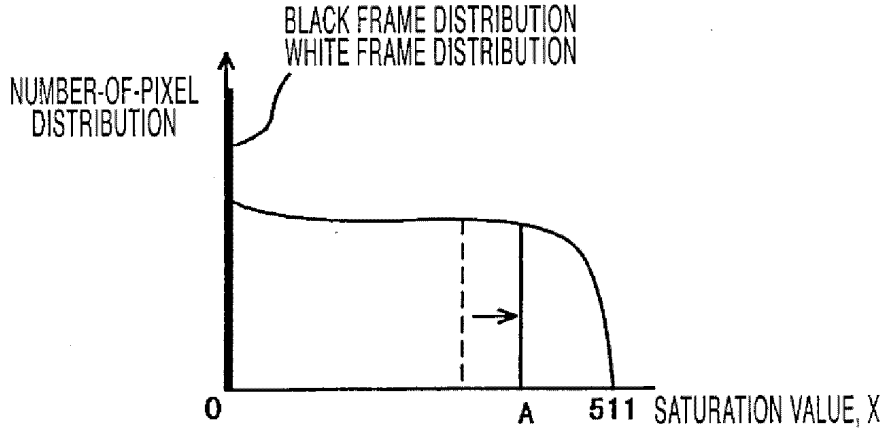


FIG. 28

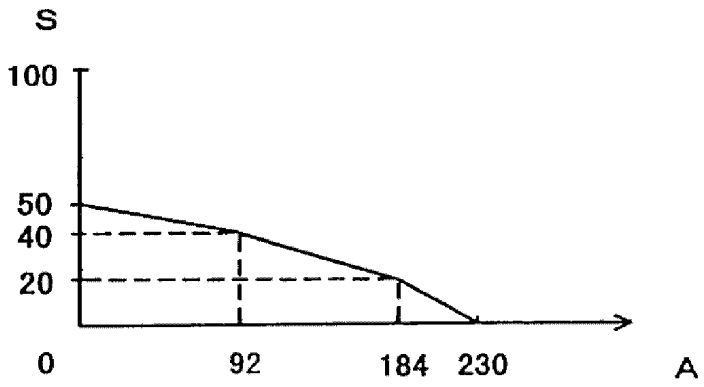


FIG. 29

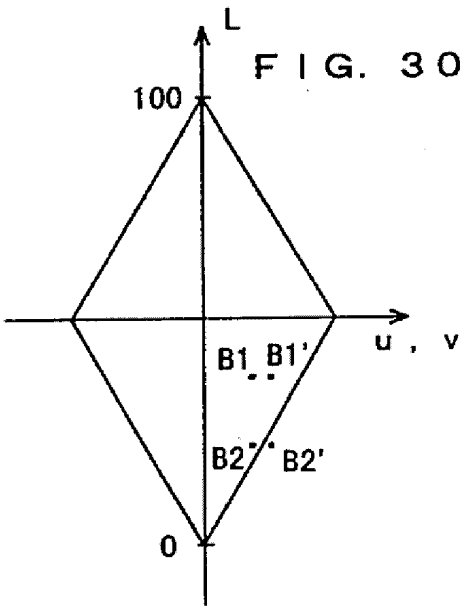

L
100
u , v
B1
B1'
B2
B2'
0

FIG. 30

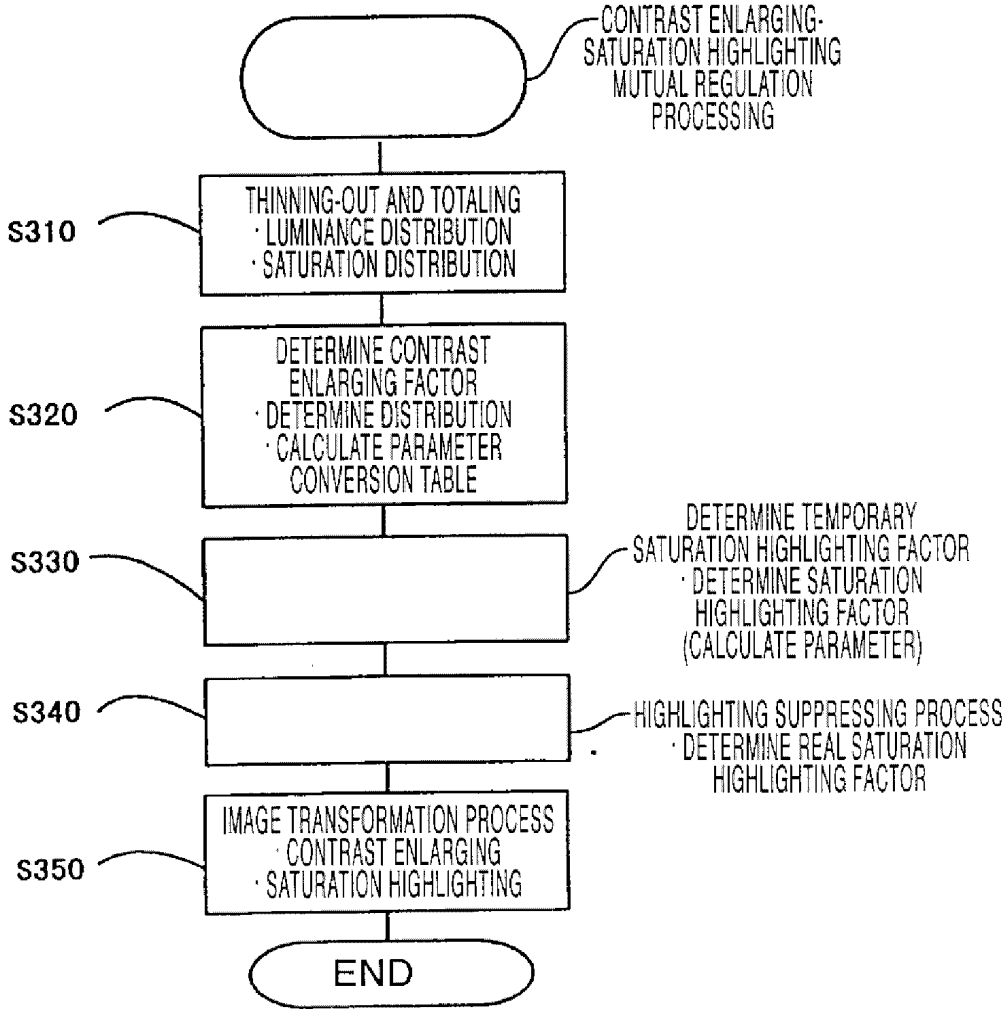

CONTRAST ENLARGING-SATURATION HIGHLIGHTING MUTUAL REGULATION PROCESSING
S310
THINNING-OUT AND TOTALING
· LUMINANCE DISTRIBUTION
· SATURATION DISTRIBUTION
S320
DETERMINE CONTRAST ENLARGING FACTOR
· DETERMINE DISTRIBUTION
· CALCULATE PARAMETER CONVERSION TABLE
S330
DETERMINE TEMPORARY SATURATION HIGHLIGHTING FACTOR
· DETERMINE SATURATION HIGHLIGHTING FACTOR (CALCULATE PARAMETER)
S340
HIGHLIGHTING SUPPRESSING PROCESS
· DETERMINE REAL SATURATION HIGHLIGHTING FACTOR
S350
IMAGE TRANSFORMATION PROCESS
· CONTRAST ENLARGING
· SATURATION HIGHLIGHTING
END

FIG. 31

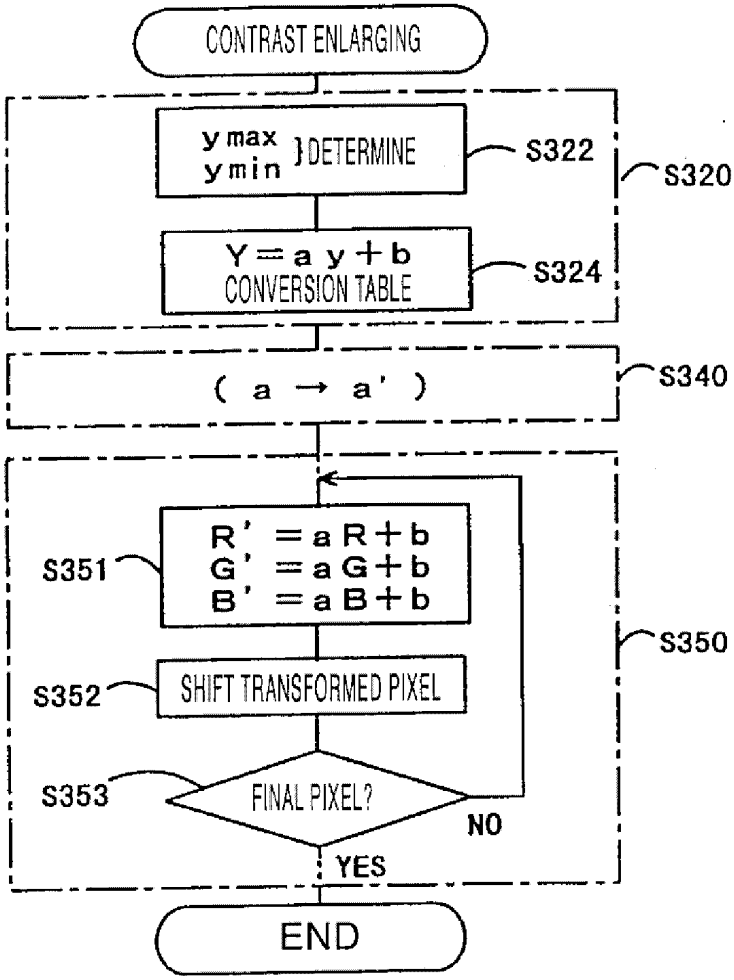

CONTRAST ENLARGING
ymax
ymin
DETERMINE
S322
S320
Y=ay+b
CONVERSION TABLE
S324
(a → a')
S340
R'=aR+b
G'=aG+b
B'=aB+b
S351
S350
SHIFT TRANSFORMED PIXEL
S352
FINAL PIXEL?
S353
NO
YES
END

FIG. 32

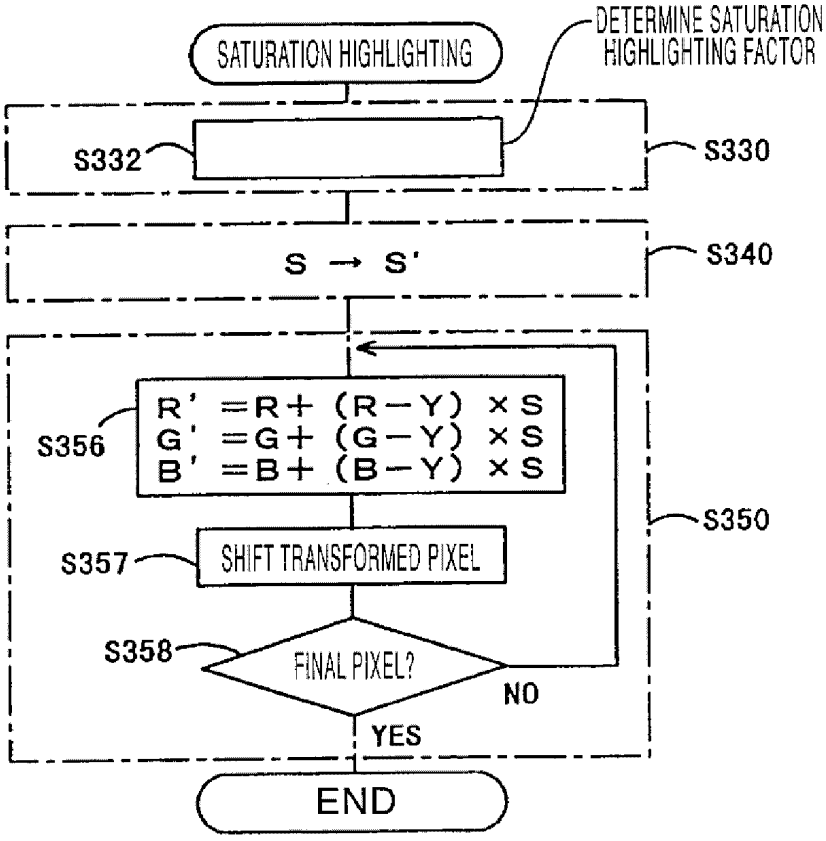

SATURATION HIGHLIGHTING
DETERMINE SATURATION HIGHLIGHTING FACTOR
S332
S330
S → S'
S340
R'=R+(R−Y)×S
G'=G+(G−Y)×S
B'=B+(B−Y)×S
S356
S350
SHIFT TRANSFORMED PIXEL
S357
FINAL PIXEL?
S358
NO
YES
END

FIG. 33

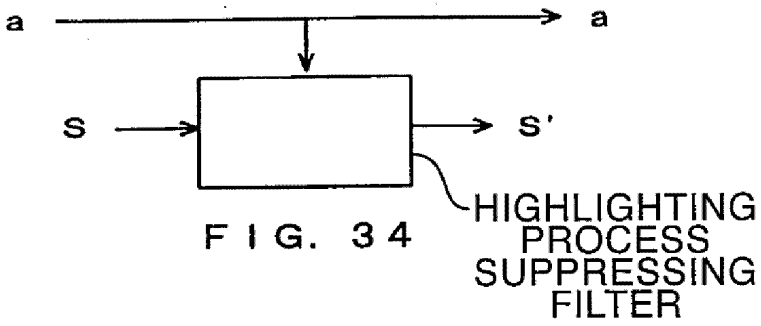


FIG. 34

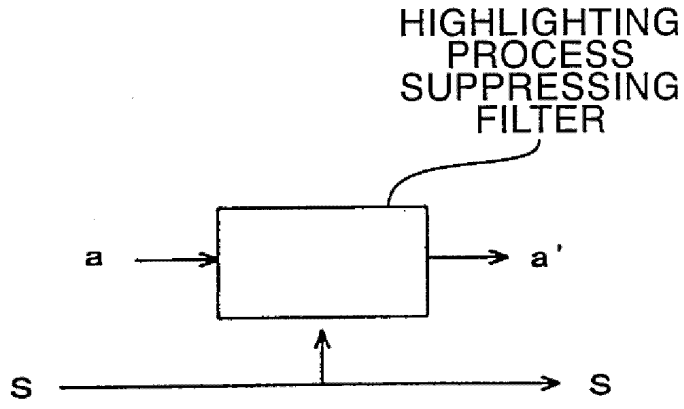


FIG. 35

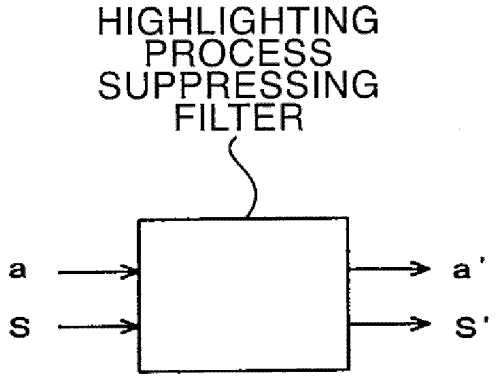


FIG. 36

FIG. 37A

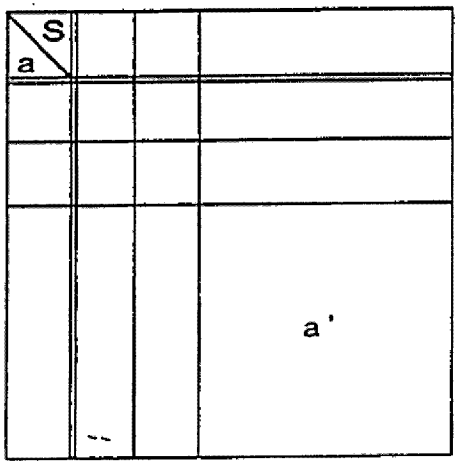


FIG. 37B

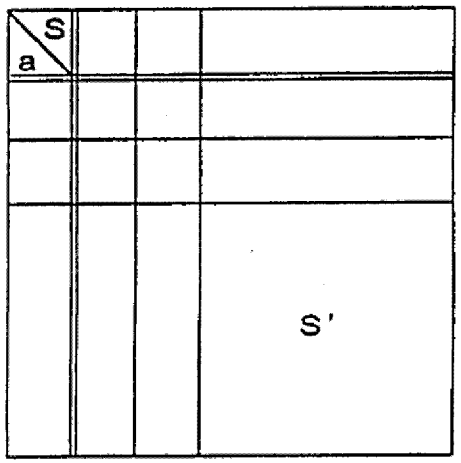


FIG. 38(A)

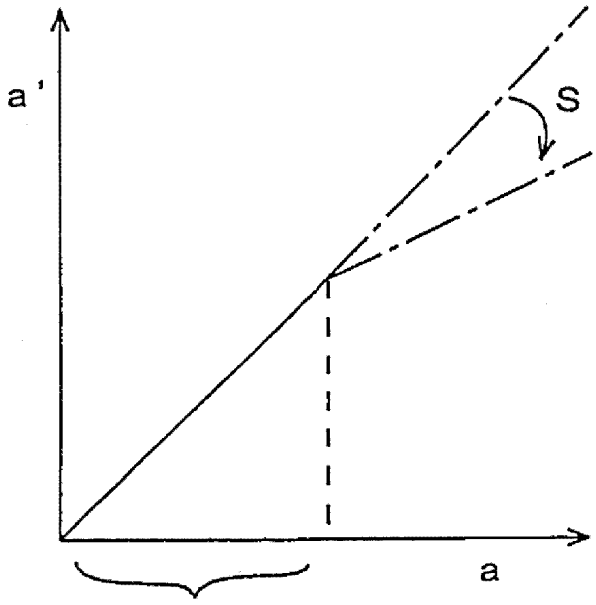
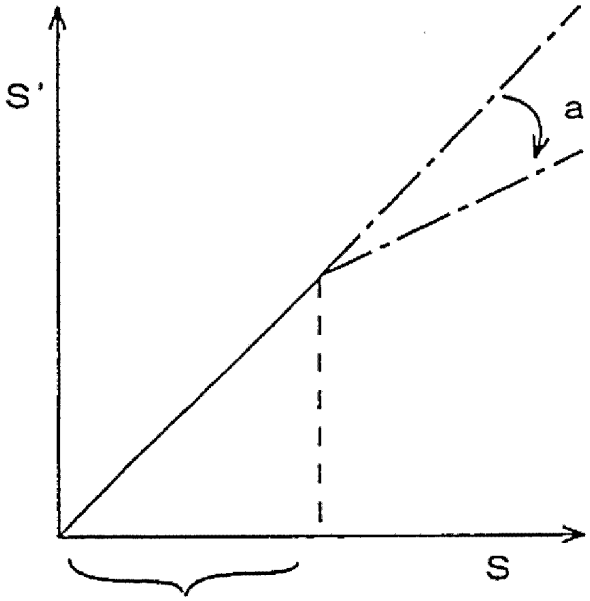


FIG. 38(B)



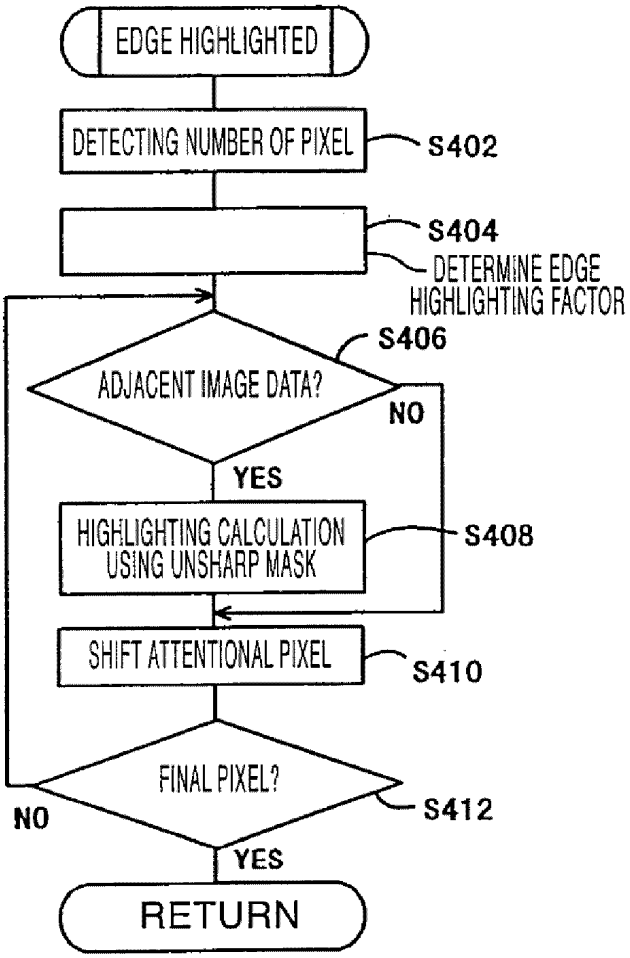

EDGE HIGHLIGHTED
DETECTING NUMBER OF PIXEL
S402
S404
DETERMINE EDGE HIGHLIGHTING FACTOR
S406
ADJACENT IMAGE DATA?
NO
YES
HIGHLIGHTING CALCULATION USING UNSHARP MASK
S408
SHIFT ATTENTIONAL PIXEL
S410
FINAL PIXEL?
S412
NO
YES
RETURN

FIG. 39

7×7

0	0	1	1	1	0	0
0	2	8	14	8	2	0
1	8	37	61	37	8	1
1	14	61	100	61	14	1
1	8	37	61	37	8	1
0	2	8	14	8	2	0
0	0	1	1	1	0	0

40

632

FIG. 40

5×5

2	8	14	8	2
8	37	61	37	8
14	61	100	61	14
8	37	61	37	8
2	8	14	8	2

41

FIG. 41

6	7	8
5		1
4	3	2

FIG. 42

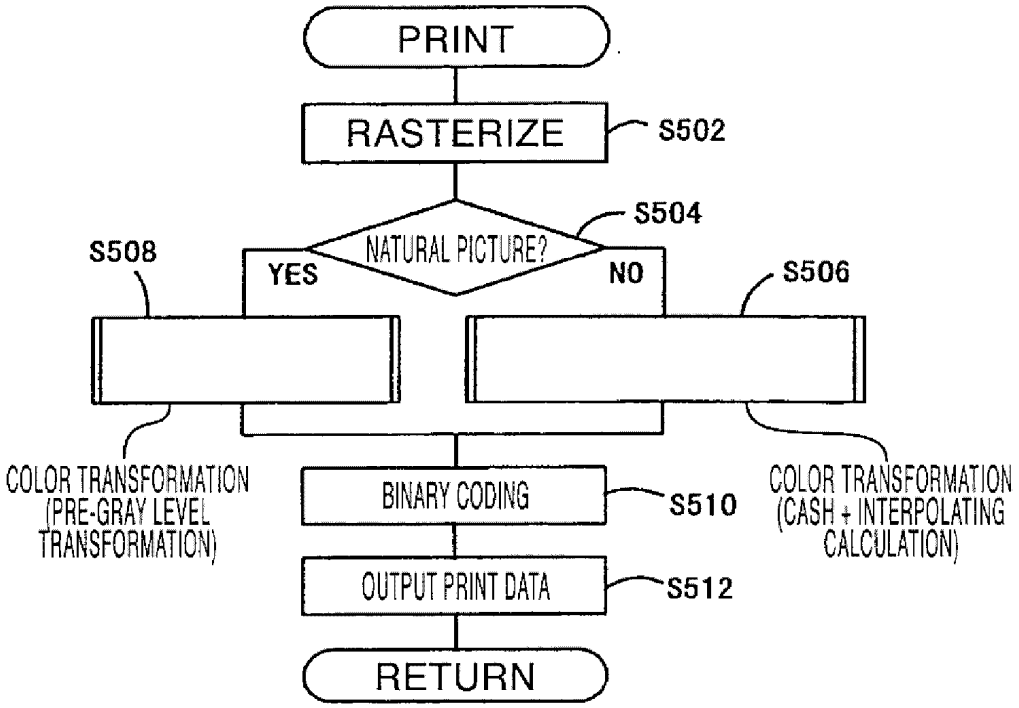

PRINT
RASTERIZE
S502
NATURAL PICTURE?
S504
YES
NO
S508
S506
COLOR TRANSFORMATION (PRE-GRAY LEVEL TRANSFORMATION)
BINARY CODING
S510
COLOR TRANSFORMATION (CASH + INTERPOLATING CALCULATION)
OUTPUT PRINT DATA
S512
RETURN

FIG. 43

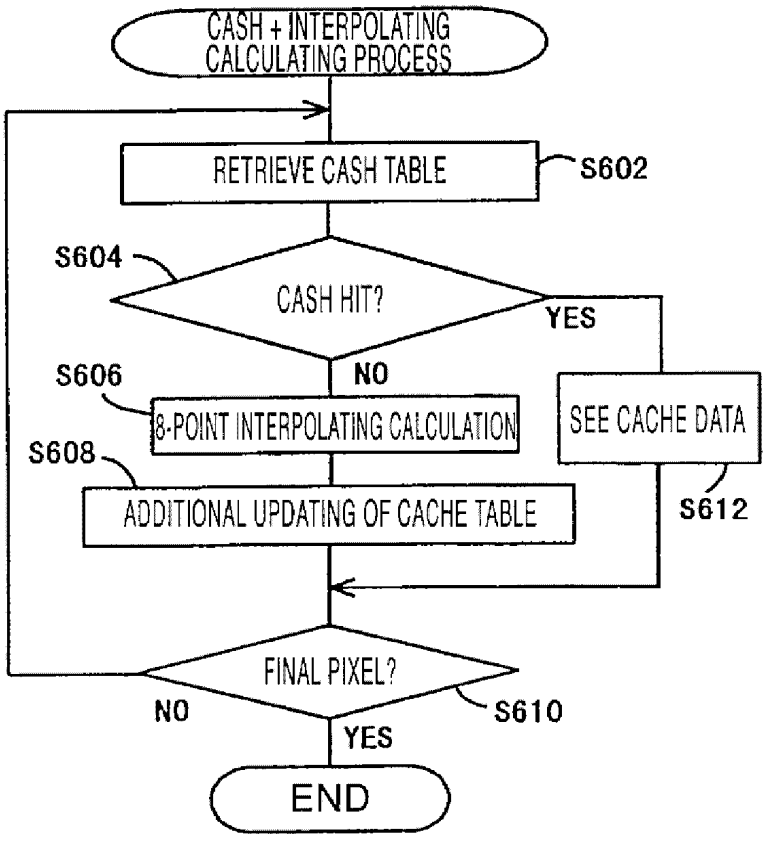
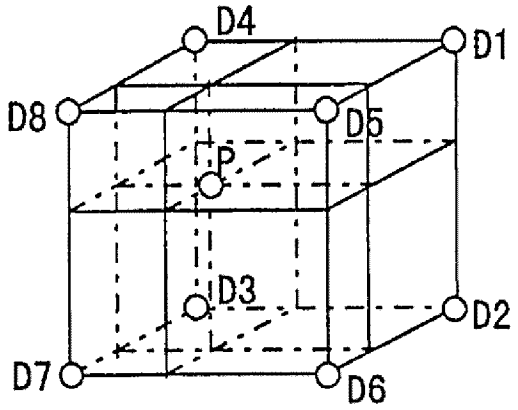
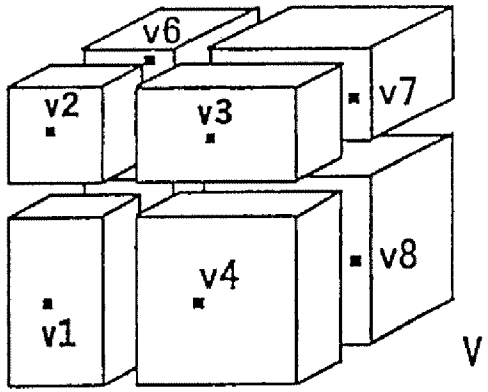

CASH + INTERPOLATING CALCULATING PROCESS
RETRIEVE CASH TABLE
S602
S604
CASH HIT?
YES
NO
S606
8-POINT INTERPOLATING CALCULATION
SEE CACHE DATA
S608
ADDITIONAL UPDATING OF CACHE TABLE
S612
FINAL PIXEL?
NO
S610
YES
END

FIG. 44

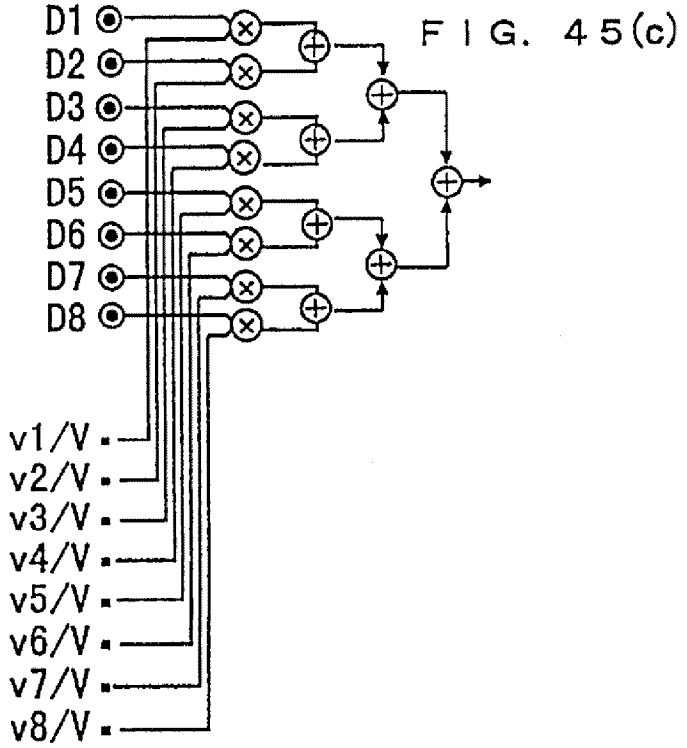
F I G. 4 5 (a)



F I G. 4 5 (b)



F I G. 4 5 (c)



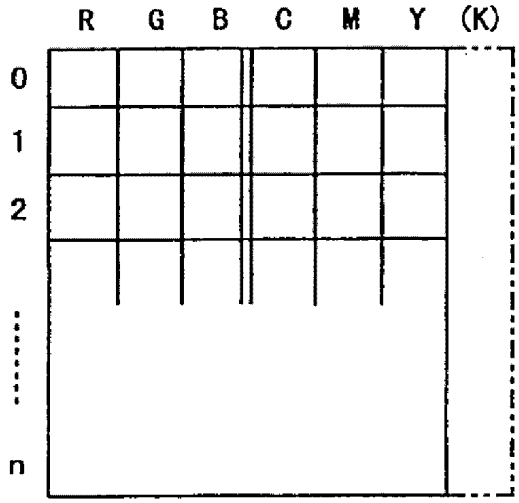


FIG. 46

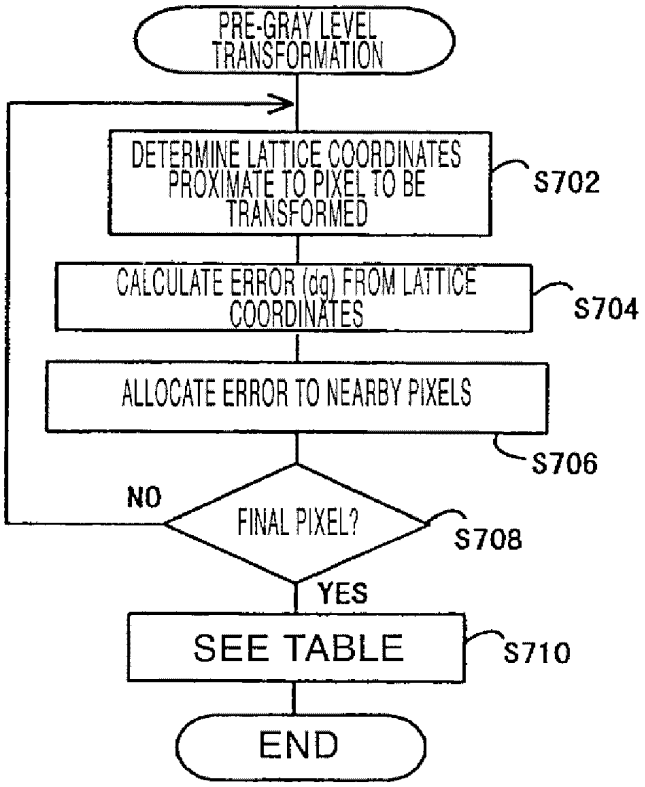


FIG. 47

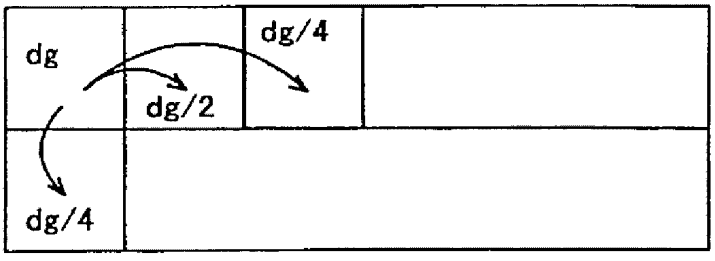


FIG. 48